INTELLECTUAL CAPITAL STRUCTURE AND VALUE CREATION OF A COMPANY: EVIDENCE FROM RUSSIAN COMPANIES

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Abstract - The article covers the questions of definition, structure and evaluation of intellectual capital (IC) and the role of IC in value creation of a company in terms of value-based management. The main research objective is to define the impact of fundamental value of both tangible and intangible assets (latter divided into three elements) on the market share price. As a general approach for intangible assets evaluation a method of indicators is used. The developed econometric model is tested on the data of emerging Russian stock market for the period from 2001 to 2006. In the focus of the research there is both the analysis of the sampled companies as a whole as well as divided into four aggregated industries: extractive industry, power engineering, communication services, and metallurgy. The conclusion provides directions for further research on the matter. Abstract. Please use 200 word maximum for this section. Abstract is a self-contained summary of the work and is not a part of the body of the text.

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INTRODUCTION TO THE PROBLEM: MANAGEMENT CONTEXT

It is impossible to create a modern system of a company management without answering the question “what the fundamental, basic goal of a company is”. The problem of determining such a goal, as M. Jensen notes (Jensen, 2001), is at the heart of the modern global discussions on corporate management.

There are two different approaches to answering this question (see, for example, Jensen, 2001; Wallace, 2003). According to the first approach, the main goal of a company is to maximize its value both for the owners (i.e. equity) and for all capital suppliers (i.e. debt and equity). In this case the target function of a company is single factor. The second approach based on the stakeholders theory suggests that a corporation exists not only to provide benefit to its investors (owners and creditors) but also for the benefit of all the rest interested parties, such as employees, buyers, suppliers, local community and government. Thus, according to this approach, the target function of a company is multifactor.

Without dwelling on the stakeholders’ theory we will make a note of just two basic moments. First of all, the stakeholders’ theory gives rather a loose determination of those parties what in its turn does not allow to define clearly the target function of a company as it is unclear whose interests should be satisfied and to what extent. Thus, E. Freeman defines a stakeholder as any person, or a group of people, who can influence the ability of company to reach its goals (Freeman, 1984). Secondly, the midpoint of the multifactor definition of the target function is the problem of choosing between different objectives:

what to do when they are different (for example, the objective of profit maximization may not correspond with the objective of market share maximization), what objective is to be considered as primary etc.
The management approach based on the idea of creating value for company owners as the main objective has been called value-based management (VBM). The value-based management is defined as 'formal and systematic approach to company management aimed at maximization of value for shareholders in a long-term prospect as the main objective'. (McTaggart et al., 1994). T. Copeland defines the value-based management as 'the approach to management when general aspirations of a company, analytical methods and management processes are aimed at helping the company to maximize its value by focusing management decision-making on the key factors (drivers) of value creation (Copeland, 1995, p. 93). At the same time, as Jensen notes (Jensen, 2001) that setting long-term value maximization as an objective by itself does not provide the management with a strategy for reaching this objective. In this context the stakeholders' theory, the techniques and instruments defined by it contribute to understanding of how value is created. The midpoint of the value-based management is the value measurement issue and the value creation process. One of the main points of VBM is defining the drivers for new value creation (Volkov, 2005, p. 67). This aspect lies at the heart of this paper.
Traditionally, tangible assets of a company — especially physical assets and capital —have been considered its most important resources. It is those assets that companies have been building their stable competitive advantages and value on. Undoubtedly, these resources are still of significant importance for competitiveness (Foss, 1997). However, the dynamic and ever-changing environment in the recent decade has made companies pay attention to the intangible assets (IA) they possess in order to outdo their competitors (e.g. Grant, 1991; Nahapiet, Ghoshal, 1998; Teece, 2000).
Research in the sphere of intellectual capital involves the findings for "understanding" the roots of a company's value, the measurement of the hidden dynamic factors that underlie the visible company…" (Edvinsson, Malone, 1997, p.11). In today's knowledge-based economy, three of the most important "hidden dynamic factors" in an organization are knowledge and know how which are created by and stored in its people (human capital), relations (relationship capital) and organizational information technology systems and processes (organizational capital). The main findings of IC research suggest that it is the leveraging of these three components that allow an organization to create and sustain a competitive advantage (Edvinsson, Malone, 1997; Stewart, 1997).
As firms respond to the critical global phenomena, the fundamental issue lies in identifying the vital components of intellectual capital that create value. In (Stewart, 1997) it is said that every firm has valuable intellectual capital; however, it is strategically vital to identify the most important areas to leverage in order to gain competitive advantage.

THE APPROACHES TO INTANGIBLE ASSETS AND INTELLECTUAL CAPITAL DEFINITION

There exist various approaches to defining the *Intangibles*, *Intangible Assets* and *Intellectual Capital*. Some authors consider these terms to be synonyms, while the others still separate them from each other [Gowthorpe, 2009]. Apart from that, a number of authors do not offer any definition, but only highlight the basic components, being a part of the concepts referred above. Without claiming for the completeness, lets us examine the basic approaches to defining Intangible Assets and Intellectual Capital. At that, we shall firstly give the approaches to the definitions of the concepts, and afterwards consider the composition and structure of Intangible Assets (Intellectual Capital).
According to the opinion of B. Lev, to which the authors of this paper subscribe, the terms Intangible Assets, Knowledge Assets and Intellectual Capital are interchangeable as all the three terms are "widely used: Intangible Assets in accounting literature,

Knowledge Assets – by economists, Intellectual Capital – in management and law literature; and on the whole they come to the same: to the future benefits that are not embodied materially" (Lev, 2004).

Hence, Intangible Assets, or Intellectual Capital, are defined by B.Lev as "non-physical sources of value (claims to future benefits) generated by innovation (discovery), unique organizational designs, or human resource practices". Intangible Assets, as defined in (Lönnqvist, Mettänen, 2002), are non-material sources of creating a company's value, based on the employees capabilities, organizations' resources, operations and relations with the shareholders. In (Lönnqvist, Mettänen, 2002), as in (Lev, 2003), the terms *Intellectual Capital* and *Intangible Assets* are suggested for interchangeable usage.

The generic definitions presented above may be somewhat concretized. Thus, Rechtman (2001) mentions the following definition given by the Financial Accounting Standards Board (FASB), according to which one can refer to Intangible Assets the assets having no material form that appear as a result of (1) *past events* that has a (2) *measurable effect* and that presents a (3) *future benefit*. The similar definition, but referring to *Intangibles* is given in (Bouteiller, 2002), where they are defined as assets arising as a result of past events and possess three main attributes: they are non physical in nature, they are capable of producing future economic benefits, and they are protected legally or through a de facto right.

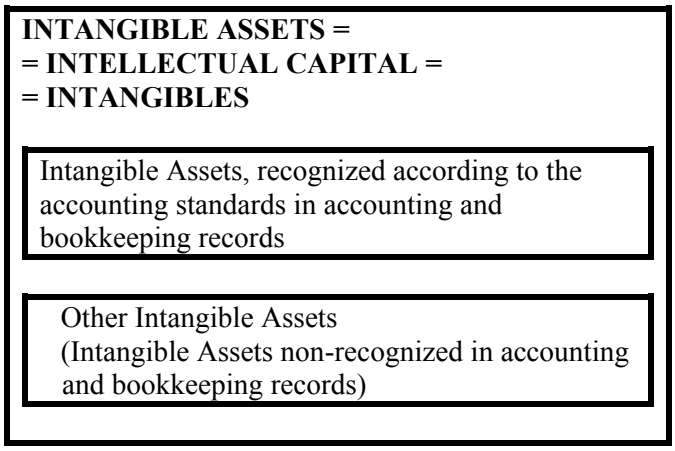
As shown earlier, along with *Intangible Assets* concept the term "*Intellectual Capital*" is used. Various definitions of Intellectual Capital are mentioned in (Edvinsson, Mallone, 1997; Stewart, 1997; Sullivan, 2000). In (Bouteiller, 2002), the definitions of Intellectual Capital existing in literature are generalized, and the following variant is suggested: "Intellectual Capital – is a developmental knowledge that is human, structural, and customer-based, and needs to be aligned with the corporate strategy and formalized / packaged in some way." We would like to stress, that in (Bouteiller, 2002), as well as in (Lev, 2003), the concepts of Intangible Assets and Intellectual Capital are synonyms. A.Brooking adheres to the same position and considers Intellectual Capital as the term given to the combined Intangible Assets which enable a company to function (Brooking, 1996, p.12).

At the same time, there are a number of papers that make a difference between the concepts of Intellectual Capital and Intangible Assets. Thus, in particular, in (Ståhle, Grönroos, 2000, p.192-199), Intellectual Capital concept is divided into potential and realized one, i.e. leading to the increase of Economic Value Added. At the same time, it is accentuated, that Intangible Assets are only a constituent part of the potential Intellectual Capital. In (Starovic, Marr, 2003), a widespread approach is described, under which Intellectual Capital (or Intangibles) is a broader concept than Intangible Assets. In this sense, Intangible Assets are only a part of Intellectual Capital acknowledged as the assets in a company's bookkeeping and accounting records.

The authors assume that narrowing of Intangible Assets concept only to the assets acknowledged in accounting is unjustified. Such opinion is a result of confusing two different problems. Firstly, what an asset is in general, and secondly, which assets can be acknowledged in accounting and which can not. In view of the fact that under the asset is basically understood any possible future economic benefit, obtained and controlled by a company, as a result of past transactions and events (Volkov, 2006), then all the elements (tangible or intangible) coming within the above definition appear to be a company's assets. It is quite another matter, if these elements match the criteria of recognition in bookkeeping and accounting or not. Thus, according to (IFAC 38), "intangible asset is an identifiable non-financial asset, having no physical form and serving for production usage or for providing the goods or services, for leasing to others or for administrative purposes." The Russian accounting standards (PBU 14/2000) supplement the enumerated criteria with a range of conditions for "recognition assets by accounting and bookkeeping as intangible". Consequently, if summarizing the criteria

of recognition of Intangible Assets, it appears that any non-financial, non-physical assets that can be divided from other property of a company and having the utility period of (as a rule) more that 12 months may be referred to Intangible Assets.
Thus, the authors' position may be summarized as follows. Any asset, belonging to a company or controlled by it, having no physical or financial (in case of financial investment) form, but capable of producing future economic benefits is an Intangible Asset. A set of Intangible Assets of a company may also be named Intellectual Capital, or Intangibles. At the same time, two subgroups should be distinguished within Intangible Assets: *recognized Intangible Assets* and *non-recognized Intangible Assets* in bookkeeping and accounting (see Figure 1).

Figure 1. The Intangible Assets Concept



THE STRUCTURE OF INTANGIBLE ASSETS

In the analysis of Intangible Assets, it is essential to define their composition and structure (McPhail, 2009). But again, there is no uniformity about this problem in the researchers' environment, although a certain general understanding of Intangible Assets composition still exists. Thus, in (Sveiby, 1997) it is determined, that Intangible Assets of a company consist of internal (patents, concepts, licenses, administrative system, organizational structure etc.) and external (brands, trademarks, relations with customers and suppliers etc.) organization structures as well as of the competence of its personnel.
According to Petty and Guthrie (2000), Intangible Assets of a company include organizational (software systems, distribution networks, and supply chains) and human capital (within the organization – employee resources and external to the organization – suppliers and customers). The same approach is described in (Edvinsson, Mallone, 1997; Roos et al., 1997). Brooking (1996) distinguishes the following constituents of Intangible Assets: market assets, intellectual property assets, human-centred assets and infrastructure assets.
A narrower understanding of Intangible Assets is submitted in (Mayo, 2001; Ahonen, 2000). These papers claim that the base of a company's Intangible Assets is constituted namely by human capital, which requires consideration from three points of view: as the amount of employees, as employees' personal properties and as work community (organization).
On the contrary, a considerably broader definition of Intangible Assets is rendered in (Andrissen, Tiessen, 2000). These researchers distinguish five asset groups that may be referred to intangible ones: valuable resources and acquisitions, attainments and non-formalized knowledge, primary processes and managerial processes, technologies and formalized knowledge as well as common moral values and norms.
Researchers are not unanimous about this problem, yet there is some shared understanding of IA composition (cf. Table 1).
Table 1. Approaches to Intellectual Capital Structure
Source: (this study)

Author	*Classification*
Edvinsson, Malone (1997)	Human capital Structural capital Customer capital
Bontis (1998)	Human capital Structural capital Relational capital
Stewart (1997)	Human capital Structural capital Customer capital
Saint-Onge (1996)	Human capital Structural capital Relational capital
Sveiby (1997)	Personnel competences Internal structure External structure
Van Buren (1999)	Human capital Innovative capital Process capital Customer capital
Roos et al. (1998)	Human capital Structural capital Relational capital
O'Donnell and O'Regan (2000)	People Internal structure External structure

The authors' attitude to the issue of IA composition and structure are mainly based on the IA classification by the International Federation of Accountants (IFAC, 1998). Within the IA structure, three blocs can be distinguished: human, relational and structural (organizational) capital. Such an approach to dividing intellectual capital is the most popular (Saint-Onge, 1996; Stewart, 1997; Sveiby, 1997; Roos et al., 1998). Nonetheless, the authors' apprehension differs a little from the common standpoint.

According to IFAC, *human capital* is defined as knowledge, skills and experience that employees take with them when leaving. Yet we define human capital as an organization's ability to benefit from knowledge, skills and experience of its employees who immanently own them, rather than a complex of their intellectual capabilities such as innovative potential, creativity, know how and experience, ability to work in team, motivation, ability to learn, educational and professional background, loyalty, etc.

IFAC considers *relational capital* as the resources related to an organization's external relations, i.e. those with customers, suppliers, and other counteragents. In this paper relational capital is defined as organization's ability to benefit from the resources related to organization's external relations rather than the resources themselves.

Organizational (structural) capital is identified by IFAC as the knowledge kept within the organization. For us, it is not simple knowledge alone, but rather the organization's ability to benefit from it. Moreover, structural capital can be divided into two subgroups: intellectual property objects and infrastructure assets (corporate culture, management procedures, etc.).

EVALUATION OF INTANGIBLE ASSETS ELEMENTS

Yet more polemic and difficult is the issue of measuring the components of intellectual capital. Empirical research on the issue can be divided into two groups by the tools employed: questionnaire surveys and qualitative indices *vs.* quantitative methods. Among the quantitative measurement methods used the most common is the method of indicators. This research belongs to the latter group. It is known that there are many different indicators characterizing certain IC components, and their choice depends on particular needs of a company. Upon analyzing data on IC component measurement, we have found the following as the most widespread (Table 2).

Table 2. Different Indicators for IC Components Measurement

IC structure	*Indicator*	*Empiric research where used*
Human capital	Number of employees	Edvinsson, Malone (1997), Liebowitz, Suen (2000), Marr, Adams (2004)
	Salary & Wages	Pulic (1998), Firer, Williams (2002), Tseng, Goo (2005), Edvinsson, (1997); Sveiby (2001)
	Sales/ Number of employees	Stewart (1997), Liebowitz, Suen (2000), Tsan (2004), Wu (2004), Chen (2004)
	Net Income/ Number of employees	Brennan, Connell (2000), Dzinkowski (2000), Tsan (2004)
Relational capital	Sales or Sales growth rate	ASTD (1999), Van Buren (1999), Brennan, Connell (2000), Dzinkowski (2000), Tsan (2004), Chen (2004), Marr (2004)
	Advertising expenses	Edvinsson, Malone (1997), Tsan (2004), Wu (2004), Chen (2004)
Organizational (structural) capital	Selling, general & administration expenses/Sales	Edvinsson, Malone (1997), Roos, Roos (1997), Stewart (1997), ASTD (1999), Van Buren (1999), Tsan (2004)
	Selling, general & administration expenses/ Number of employees	Edvinsson, Malone (1997), Chen (2004)

To develop measurement indicators for the three IC components applicable to each company of the sample is undoubtedly a difficult task. It is almost impossible to find indicators that would reflect the idiosyncratic nature of intangible assets as a whole and a particular company's unique resources. Moreover, this method deals with official accounting reports, which also produces certain difficulties, especially in such an emerging economy as Russia. Thus, developing measurement indicators for the three IC components provides ways for experimentation.

Human capital is known to be based on an employees' professionalism. To benefit from an employees' knowledge, a company should invest in this asset. The labor market is quite competitive, and employees may leave if they are underpaid. With that in mind, the authors suggest using the ratio of total salary and wages to the number of employees as a human capital indicator, which allows characterizing a company's expenses per employee. One of the main advantages of this method is that it is possible to compare companies of different sizes as this indicator is a relative one. Naturally, a major drawback of the chosen indicator is that salary reflected in balance sheets does not include bonuses, salary increments and other incentives. In addition, it may be more

correct to use a cumulative payroll for a certain period of years. Unfortunately in annual reports of Russian companies only the indicator of "wages and salary" can be found.

Another quite difficult challenge is identifying relational capital indicator. As our analysis shows, the sales indicator is used most often. However, we believe this indicator reflects both relational and human capital usage. This is why the authors suggest their own approach to measuring relational capital. First, we shall use the rate of sales growth rather than sales itself. Second, GDP in its essence is total sales of companies operating in a certain country as reflecting the total amount of revenues. Using Russia's statistics of nominal GDP volume classified by the types of economic activities, we can find GDP volume in each industry for a certain period. Thus, relational capital shall be characterized by the ratio of a company's sales growth rate to GDP growth rate of the industry the company belongs to. This indicator's advantage is that it shows a company's efficiency in comparison with the industry as a whole in terms of customer relations (sales growth rate), i.e. how the company outperforms its competitors by using its relational capital. One of the disadvantages of this indicator is that it more reflects relations with customers and clients (in terms of sales) rather the company's relations with its suppliers.

For the organizational capital indicator, we shall use the ratio of a company's expenses (without salary expenses) to the number of employees. This indicator also allows comparing companies of different sizes because of its relative nature and it characterizes a company's investment in improving its products, structure, technologies, business processes, etc., i.e. in increasing its structural capital value per employee. One of the disadvantages is that it is a cost-method indicator rather then income method indicator (as the indicator of human capital). As a result, the authors suggest the following measurement indicators for intellectual capital (s. Table 3).

Table 3. Measurement Indicators for the Three Elements of Intellectual Capital

IC structure	*Key*	*Indicator*
Human capital	*HC*	Salary & wages/ Number of employees
Relational capital	*RC*	Sales growth rate/ Industry GDP growth rate
Organizational (structural) capital	*SC*	Company's Expenses (excluding salaries & wages)/ Number of employees

THE RESEARCH MODEL AND SAMPLE

The regression model we have developed shows the influence of tangible and intangible assets — the latter being divided into three components — on market share price of a company. As mentioned above, the authors distinguish the following elements of intellectual capital: human (HC), relational (RC) and structural (SC) capital value. The dependent variable of market share price (P_S^M) is calculated by dividing the market capitalization by the number of shares.

Thus, the analyzed regression model looks like:

$$P_S^M = \lambda_0 + \lambda_1 * HC + \lambda_2 * RC + \lambda_3 * SC + \lambda_4 * CE + \varepsilon_1 \quad (1)$$

where λ_0, λ_1, λ_2, λ_3, λ_4 - unknown parameters of the regression model;

ε_1 - a random variable characterizing the factors not considered in the model.

For econometric analysis, tangible assets (capital employed – (CE) of a company are characterized by net assets divided by the number of shares to obtain the commensurate of independent and explanatory

variables (all variables being relative).
As we know, an econometric model should fit the frameworks of a classical normal regression model. That is, it should meet a number of probabilistic hypotheses in respect to the random elements of the model. The specific character of the data used in this paper implies that the hypothesis on homoscedacity of the model's errors will not be obviously met. This was proved by testing each model for heteroscedasticity. To eliminate the heteroscedasticity and improve the quality of estimation, the model was tested using the method of generalized least squares. The analysis of the factors for multicollinearity was performed.
For the variables included in model (1), the correlation matrix looks as follows:

$$V_1 = \begin{pmatrix} 1 & 0.7809 & 0.5117 & 0.4869 & 0.8598 \\ 0.7809 & 1 & 0.0231 & 0.1512 & 0.0804 \\ 0.5117 & 0.0231 & 1 & 0.0102 & 0.0783 \\ 0.4869 & 0.1512 & 0.0102 & 1 & 0.1369 \\ 0.8598 & 0.0804 & 0.0783 & 0.1369 & 1 \end{pmatrix} \quad (2)$$

The analysis of the coefficients of correlation among the variables allows making a conclusion about absence of pair correlation among the factors.
We have tested our hypotheses on a sample of Russian issuing companies which shares are traded in the Russian Trading System (RTS) for the period 2001 – 2006. To keep the data homogeneous, the sample does not include financial intermediaries (banks and financial institutions). The final sample we have used includes 43 companies. First, the model described above was tested on the whole sample, then on each industry. The companies have been divided into four aggregated industries: extractive industry (incl. oil holdings and oil-and-gas companies), power engineering, communication services, and metallurgy (ferrous and non-ferrous).
The total sample includes 258 company-years (43 companies for 6 years).
Primary data of the companies' market capitalization has been found on RTS Website (www.rts.ru). Our analysis has used weighted averages for the second quarter. As we have chosen the Russian ruble for all calculations, RTS market capitalization data has been recalculated in rubles at an average exchange rate (Table 4).

Table 4. Descriptive statistics of the Sample to Analyze

#	Indicator	Mean	Median	Standard deviation
1	Market share price	0.000259	0.0000192	0.00077
2	Human capital indicator	0.371851	0.128823	0.821462
3	Relational capital indicator	1.208992	0.896959	2.743915
4	Organizational capital indicator	3.800136	0.916536	11.28467
5	Net assets (mln. RUB)	88,698	25,420	173,303
6	Net assets / Number of shares	0.000268	0.00002745	0.000856

RESEARCH RESULTS

Let us consider the measurement results of regression model (1) as regard to the whole sample of issuing companies analyzed.
Having analyzed the model, the following results have been found. Determination coefficient is 0.8387, with the equation as a whole and its coefficient being significant. Thus, tangible and intangible assets — the latter divided into three components — measured with the indicators suggested can explain 83.87% of market share prices on the Russian market. Since share price immediately correlates with value of a company as a whole, independent variables can be said to explain 83.87% of a company value growth.

The regression equation will be as follows:

$$\hat{P}_S^M = 0{,}00532 + 0{,}003266 \times HC + 0{,}0006533 * RC + 0{,}0001153 * SC + 0{,}6140 * CE \quad (3)$$

We have performed the analysis of significance both of the entire model and the variables included into it. The results of the analysis of adequacy that includes the test of the hypothesis on the significance of the model using the Fisher's test are represented in Table 6.

To check significance of the explanatory variables included in the model, the following hypotheses were formulated:

$$H_0 : \lambda_1 = 0, \quad H_1 : \lambda_1 \neq 0$$
$$H_0 : \lambda_2 = 0, \quad H_1 : \lambda_2 \neq 0$$
$$H_0 : \lambda_3 = 0, \quad H_1 : \lambda_3 \neq 0$$
$$H_0 : \lambda_4 = 0. \quad H_1 : \lambda_4 \neq 0$$

For each factor of the model the mentioned hypotheses mean the following: if the null hypothesis is accepted that means that the market share price does not depend on the analyzed factors. If the alternative hypothesis is accepted that means that the following relationship exists.

Test of the hypotheses using the *t*-test definitely points to the fact that the null hypotheses in all the cases should be rejected and accordingly the regression coefficients, and hence the corresponding factors are statistically significant.

The regression equation shows that tangible assets influence market share price at most, with human and relational capital prevailing among intangible assets. At the same time, it should be noted that testing econometric model (1) for particular industry increases the determination coefficient to certain extent. Analyzing each company separately in the same way shows the determination coefficient varying from 0.3136 to 0.9788, with most companies' R^2 value exceeding 0.50 that shows the explanatory power of the model. This fact helps to make the conclusion that intangible assets are unique for each company. Whereby averaging them together by joining companies within a single sample insignificantly impairs the results by lowering determination coefficient and making worse the indicators of F- and t-statistics.

Thus, the suggestion that the market share price depends on the three components of intellectual capital for the Russian market is statistically justified according to developed econometric model.

The results of statistical calculations for testing the null hypotheses for model (1) are presented in Table 5.

Table 5. Results for statistical analysis for the model (1)

№	Statistical characteristics	Sample as a whole	Extractive industry	Power engineering	Communication services	Metallurgy
Model* (1): $P_S^M = \lambda_0 + \lambda_1 * HC + \lambda_2 * RC + \lambda_3 * SC + \lambda_4 * CE + \varepsilon_1$						
1	Intercept	0,00532	0,000590	0,0000299	0,0002938	0,0005681
2	Coefficient before the first independent variable**	0,003266 (2,28)	0,006655 (2,30)	0,000452 (2,11)	0,001656 (3,33)	0,003694 (2,46)
3	Coefficient before the second independent variable**	0,0006533 (7,69)	0,0002964 (2,88)	-0,0001768 (-3,22)	0,003431 (3,10)	0,0002434 (2,86)
4	Coefficient before the third independent variable**	0,0001153 (3,54)	0,000459 (3,19)	0,00001349 (5,07)	0,000164 (5,65)	0,000779 (2,71)

* Tested at 5% significance level
** t-statistics is shown in parentheses

5	Coefficient before the fourth independent variable**	0,6140422 (12,17)	0,622456 (7,75)	0,310326 (6,73)	0,64630 (4,60)	0,24064 (3,15)
6	t-critic.	1,9693	2,0086	1,9955	2,0086	2,0555
7	F-statistics	90,24	82,01	25,55	82,71	14,42
8	Coefficient of determination R^2					
	- R^2	0,8387	0,9437	0,7644	0,9430	0,8655
	- R^2_{adj}	0,8294	0,9322	0,7345	0,9316	0,8064

The results of testing the model (1) show that the best correlation between the market share price and components of intellectual capital and capital employed appears within the extractive industry where the coefficient of determination equals 0.9437. The communication services industry has shown a less close correlation between the analyzed variables with the coefficient of determination of 0.9430. Nevertheless, the coefficients of determination of the sample as a whole and of each of the industries exceed 0.75. The *F*-test also allows us to accept the statistical hypothesis on significance of the analyzed model for all the industries.

According to the results, tangible assets (expressed by the indicator of capital employed) influence market share price of Russian companies more than the three components of intangible assets. At the same time, the analysis has shown that of the three components of intellectual capital, human capital influences the market share price the most in three of the four industries (except communications). This proves the results of existing international research with the method of indicators. A similar research on the Russian market (Bayburina, Ivashkovskaya, 2007) found that human capital was also distinguished as the major factor influencing company value creation (there a method of occurencies variables for intellectual capital components was used). It should be noted that the communication services industry has demonstrated relational capital as the most influencing share prices of the three intellectual capital elements. We attribute this to the industry specifics. In that industry, customer loyalty (efficiency of relationship capital) plays enormous role. In the power engineering industry, the relational capital influence on market share prices is negative. It must be related to the fact that almost all power engineering companies are monopolies, and relations with their customers and other counteragents are not so significant for a company value creation.

Thus, again, it is industry specifics that make a certain intellectual capital element's influence on share prices to prevail

CONCLUDING REMARKS

The conditions of knowledge-based economy have led to increasing attention to intangible assets (e.g. Stewart, 1997; Petty, Guthrie, 2000; Bontis, 2001). And a special area that attracts interest of academics and practitioners is the role of intangible assets in creating a value of a company and the way it can be measured (Stewart, 1997; Edvinsson, Malone, 1997; Sveiby, 1998).

This article continues the previous research of the authors on the Russian market that was finished by stating that "the question of Intangible Assets structure demands the further specification, and also the problem of extracting separate elements of Intangible Assets from their aggregate value needs to be solved". One of the objections of the article was to find any peculiarities that have companies on the Russian market concerning intangible assets.

This research has tested the regression model on the sample of Russian companies that characterizes the relationship between market share price and tangible and intangible assets – the latter divided into three components (human, relational and organizational) of a company.

The data that was used for the analysis covers 43 issuing companies which shares are traded within

Russian Trading System during 2001–2006. The total sample is 258 company-years (43 companies in 6 years). Both the sample as a whole and four particular industries: extractive, power engineering, communication services and metallurgy—have been analyzed.

To continue the conclusion of the previous research of the authors, the results upon testing model (1) prove the statement that tangible assets play a more important role for Russian companies in company value creation than intangible ones. While prevailing of a certain element of intangible assets on the market share price is explained by specifics of that industry. At the same time, the sample as a whole and most industries show that human capital is a major value-adding factor for Russian companies.

This article presents results of the research based on measurement of intellectual capital components by the method of indicators. In general, our results have met our expectations. Yet this work seems to be just the first step towards measuring intellectual capital components and distinguishing elements of intangible assets value. Some other peculiarities of emerging markets in general and Russian market in particular will be found. Further research in this field shall be developed towards creating and testing other measurement models for the three intellectual capital elements: human, relational and structural.

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